

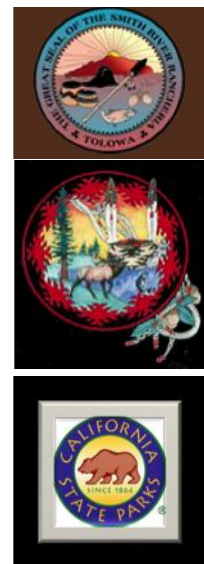
Indigenous Peoples and Northwest Climate Initiatives: Exploring the Role of Traditional Ecological Knowledge in Resource Management

In 2012, the North Pacific Landscape Conservation Cooperative (NPLCC) and the Northwest Climate Science Center (NW CSC) awarded over \$300,000 in funds to seven projects that facilitate the use of traditional ecological knowledge to help inform natural and cultural resource management. The U.S. Fish and Wildlife Service provided funds to the NPLCC for these projects, with two of the projects co-sponsored by the Northwest Climate Science Center. This profile is the first step in an ongoing effort to share information about these tribally led projects. It provides information on each of the grants awarded to tribes and First Nations in the NPLCC, and includes an overview of the NPLCC and the NW CSC. The profile showcases projects and shares the diverse ways in which tribal, First Nations and Alaska Native communities are gathering TEK, integrating this knowledge into resource management, and addressing gaps in climate change information. In 2013, we will develop individual profiles for each project to share the work, lessons learned and outcomes from these efforts.

Traditional ecological knowledge (TEK) is the primary indigenous way of understanding relationships among species, ecosystems, and ecological processes. TEK can play a vital role in climate change assessment and adaptation efforts that bridge human and environmental systems. TEK can be referred to as a subset of indigenous knowledge, while in other cases it is considered synonymous with indigenous knowledge. In this document, traditional ecological knowledge (TEK), traditional knowledge, and indigenous knowledge are used interchangeably.¹

Coastal Cultural Resources at Tolowa Dunes State Park: *Traditional Ecological Knowledge to Model the Effects of Climate Change and Sea-Level Rise on Coastal Cultural Resources at Tolowa Dunes State Park*

The ancestral Tolowa people lived along the Smith River and its tributaries northwestern California. Tolowa people are part of several tribal nations, including the Smith River and Elk Valley Rancherias. In collaboration with the California Department of Parks and Recreation, the Smith River and Elk Valley Rancherias are undertaking a project to investigate how climate change will affect tsunamis and sea level, and subsequent effects on Tolowa cultural resources at the Tolowa Dunes State Park (TDSP), a 5,000 acre coastal park. The project will use GIS mapping to integrate ethnographic, geologic and oral history accounts of climate through time in culturally important areas. In order to protect Tolowa peoples' traditional resources, as well as archeologically important sites, this project will map and record past tsunami events, record sand dune ages and map sea level rise. This information will be used to understand previous changes in climate and landscape and to prepare for current changes in climate and the effects that they may have on culturally important areas and resources.



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Oral history interviews with tribal elders will be conducted alongside geologic coring samples of dunes. Together, these sources will give a record of ecosystem changes over time. Comparing this data together will give a nuanced understanding from both a Western scientific and

¹ For detailed definitions and references on traditional ecological knowledge, see http://tribalclimate.uoregon.edu/files/2010/11/TEK_Climate_Synthesis_Oct-12-1nkf2o3.pdf

traditional view. As a result of this project, the California Department of Parks and Recreation, in collaboration with Smith River and Elk Valley Rancherias, will create an extensive report detailing the changes in climate over time in the TDSP and how culturally important areas have been affected by these changes. This report will help Tolowa people to prepare for climate change impacts on an important cultural area, the Tolowa Dunes State Park.



Karuk Tribe: *Preserving Tribal Self-Determination and Knowledge Sovereignty While Expanding the Use of Tribal Knowledge and Management in Off Reservation Lands in the Face of Climate Change*

The Karuk Tribe is a federally recognized tribe located in northern California. Their traditional territory encompasses approximately 1.48 million acres along the mid-Klamath River and Salmon River watersheds, much of which today is under USDA Forest Service management. The Karuk people continue to live in their ancestral homeland, and retain jurisdiction over trust land. The Karuk Tribe's project is aimed at exploring how traditional Karuk knowledge can be applied to land management in Karuk territory. The project seeks to address difficulties of using traditional ecological knowledge (TEK) in land management and conservation today. These difficulties include issues of sovereignty and the appropriation of indigenous knowledge. The Karuk project will describe institutional and cultural barriers to using TEK in modern land management and apply these findings at a local, regional and national level. Subsequently, the project will seek "proactive solutions to these circumstances," thereby providing a model for the NPLCC and other tribal communities struggling with how to integrate TEK into land management.

This project will identify cultural and institutional barriers to integrating TEK into land management. In doing so, this project seeks to ensure that tribal sovereignty and tribal knowledge are respected by identifying challenges to using TEK in Karuk country and by providing solutions to these problems. These solutions will "promote tribal self-governance, tribal self-determination and knowledge sovereignty" by using TEK in a way that aids and empowers the Karuk community. Additionally, the project will review consultation between agencies and other tribes to help to develop solutions for an effective use of Karuk TEK in land management. As a result of this project, the Karuk Tribe will describe Karuk management practices and prioritize which management practices are most important to be revitalized. The project will also create a summary of the cultural and institutional barriers and potential solutions to expanding the use Karuk TEK into the management of Karuk territory. These outputs align with NPLCC goals and can also serve as a framework to help other organizations with an interest in integrating TEK into management practices.

Yurok Tribe: *Utilizing Yurok Traditional Ecological Knowledge to Inform Climate Change Priorities*

The Yurok people are located in the lower Klamath River watershed. The lower Klamath and the surrounding areas, including a two-mile by forty-four mile reservation that encompasses the mouth and banks of the Klamath River, are the ancestral lands of the Yurok people. The Yurok project will study climate change impacts on culturally important species in ancestral Yurok territory by using TEK from interviews to map changes in species composition over time. Interviews will be collected and synthesized into Geographic Information Systems (GIS) map format to help guide future management of Yurok ancestral resources.



This project has two main objectives. The first is to help the Yurok Tribe to collect TEK to effectively guide management of culturally important species. The information gathered by this project will be critically important in guiding future Yurok climate change adaptation planning. The second objective is to aid the NPLCC in creating a method for expanding the use of TEK into their practices by providing a model of how to gather TEK in an indigenous community while respecting privacy and sovereignty of indigenous knowledge.

This project will include a series of interviews with Yurok elders, a GIS synthesis of information, and meetings throughout the tribal community. The meetings will help to share information about climate change impacts and the work of the ongoing project, identify tribal priorities in climate change planning, and gather knowledge on observed changes in Yurok Ancestral lands. After conducting meetings and interviews, the project team will transcribe key findings into GIS, allowing the project team to better identify priorities in management, as well as tribal needs and goals for the future.



Tulalip Tribes: *Tribal Recommendations on a Traditional Knowledge Management Framework for the NPLCC*

The Tulalip people are a Coast Salish people from the mid-Puget Sound. Their reservation encompasses over 22,000 acres. This project will initiate a tribally led discussion about the role of traditional knowledge (TK) and science in NPLCC activities. This discussion will be facilitated by the project team and include the 21 member tribal governments of the Northwest Indian Fisheries Commission, and potentially other interested tribal parties, in order to analyze existing NPLCC practices, and “propose a framework for the use of TK based on discussions [of participating tribal governments].” The goal of this project is to create a framework that allows tribes to effectively express tribal priorities for using TK in management. The project team will also seek to make their findings available to other tribal communities through outreach.

The aim of this project is to provide the first large-scale, tribally led framework for how TK and Western science should interact in order to address inequalities that favor scientific voice over indigenous voice in discussions of the role of TK in management. By initiating a tribally led process, this project addresses specific indigenous concerns, such as cultural norms, intellectual property issues and governance. Prior to tribal discussion panels, the project team will write reports summarizing the current state of NPLCC policies and of the relationship between TK and science in general, to be distributed among tribal parties.

The project will synthesize the discussions into a set of recommendations, creating a tribally led set of guidelines for an equitable and mutually beneficial relationship between TK and Western science. These recommendations are designed to ensure that culturally sensitive knowledge is protected according to a tribally led process. TK has immense value in describing climate change effects and providing insight of potential adaptations. However, it is critical that the relationship between TK and science is one in which both parties are respected, as TK also plays the vital role of maintaining the identity of native peoples. This project aims to articulate a tribally led vision of how science and TK can collaborate, so that the NPLCC can ensure that it continues in its mission for meaningful tribal involvement.



Swinomish Tribe: *Correlation and Climate Sensitivity of Human Health and Environmental Indicators in the Salish Sea*

The Swinomish Tribe is located along the lower Skagit River in the Puget Sound. Swinomish people are descended from bands of people from the Skagit and Samish Rivers, as well as nearby waterways and islands. Their homeland and reservation has been identified regionally as particularly vulnerable to sea-level rise and an increase in storms occurring due to climate change. The Swinomish project will develop and compare environmental and community health indicators in relation to climate change, using traditional Swinomish as well as contemporary scientific knowledge. They will apply these indicators to landscape conservation to demonstrate how Indigenous Knowledge (IK) can be used to identify management priorities. This project will center on both the Swinomish tribal community, as well as a Coast Salish First Nation in British Columbia.

This project will show how IK can be usefully applied to land management. In addition, project researchers will use IK to develop a climate sensitivity assessment that fills tribal and First Nations needs regarding the conservation of culturally important species in the face of climate change. As the first part of the project, the Swinomish project team will synthesize and organize existing environmental health data and community health data in both communities, as well as gather new data. This data will be used to make an environmental health report. Overall, this project will assess how environmental and community health indicators are linked. Furthermore, this information will be used to create a climate sensitivity diagram that describes how climate change is affecting environmental and community health. This diagram will be applicable to other indigenous communities, and can be used as a model for other communities' climate change research.

Heiltsuk Nation: *Implementing Ecosystem-based Management in the Central Coast of British Columbia - Heiltsuk Participation in the Strategic Landscape Reserve Design Process*



The Heiltsuk people are located on the central coast of British Columbia. Heiltsuk territory encompasses 16,658 square kilometers of land, as well as extensive nearshore and offshore waters. The Heiltsuk Nation is seeking to integrate their traditional knowledge and values into land management practices. This project will seek to integrate Heiltsuk TEK with Strategic Landscape Reserve Design (SLRD) mapping to identify areas for conservation. Heiltsuk and neighboring communities are integrating ecosystem-based management into their practices already, and are working to further develop land management through both high-tech mapping and use of Heiltsuk TEK. This project represents part of ongoing efforts by the Heiltsuk people to manage their culturally important places and resources.

Developing SLRD that integrates TEK will aid the Heiltsuk people in achieving their vision for their homeland. It is part of an ongoing relationship between the Heiltsuk and their ancestral lands, and represents efforts to re-integrate TEK into land management. The project aims to show where traditional Heiltsuk culture and heritage sites, old growth forest, aquatic and other valued resources are located. SLRD maps will incorporate Heiltsuk TEK and surveys from the field will ensure that the maps are accurate and culturally relevant. GIS maps will then provide a baseline for conservation efforts and work towards integrating Heiltsuk TEK into future land management.



Organized Village of Kasaan: *Determining how Climate Change May Affect the Traditional Gathering Calendar*

The Organized Village of Kasaan is located in southeast Alaska on Prince of Wales (POW) Island, within the Alexander Archipelago. The 4 federally recognized “POW” Tribes (Craig, Hydaburg, Kasaan and Klawock) have formed a Tribal Environmental Coalition to address environmental issues. As part of their work together, they are collaborating on this project, which aims to determine if Tlingit Tribe and/or Haida Tribe’s traditional gathering calendar has changed over time because of climate change impacts. The project will center on multi-generational interviews. These interviews will be arranged after community informational meetings occur to educate POW Tribal communities about the project and to establish trust in each community. As TEK is passed from generation to generation, environmental changes must be taken into account. This project will apply TEK to foster an understanding of climate change impacts over time on traditionally gathered resources on Prince of Wales Island. The project is also intended to inform government action to increase protection of natural resources in the POW region.

U.S. Department of the Interior Climate Change Initiatives

The U.S. Department of the Interior (DOI), through Secretarial Order 3289, established Landscape Conservation Cooperatives (LCC) and Climate Science Centers (CSCs) as part of a larger effort to understand climate change impacts and further efforts at climate change adaptation and mitigation. LCCs, which have emerged as a public-private partnership designed to foster collaboration between regional organizations, are intended to network governmental, tribal, non-governmental and other conservation efforts, providing a holistic approach to conservation and sustainable resource management. CSCs are designed to provide the scientific information and tools that resource managers need to achieve these goals. As part of this process, CSCs solicit guidance from the resource-management community, including tribes, federal, state, and other agencies and organizations, to identify and prioritize science needs. LCCs and CSCs collaborate closely in their complementary roles.

North Pacific Landscape Conservation Cooperative

The North Pacific Landscape Conservation Cooperative (NPLCC) is “an international member-driven partnership of state, federal, and provincial agencies; Tribes and First Nations; nongovernmental



organizations; universities; and others” that “builds upon the institutional knowledge these cooperators bring to address natural and cultural resource management challenges of the 21st century.” The NPLCC works to disseminate scientific conservation information to its partners and others in an effort to prepare for changes in climate. The NPLCC extends from the Kenai Peninsula in south-central Alaska to Bodega Bay in northern California. It includes landscapes within the Kenai, Chugach, St. Elias, and Coast Mountains of Alaska and Canada (including British Columbia); and portions of the Cascade Range, Klamath, and Coast Range in Washington, Oregon, and California and into adjacent coastal zones.

In an effort to further collaboration with tribal communities, the NPLCC has included tribal representatives on the executive leadership board from Alaska, Oregon, Washington, California and British Columbia. Additionally, the NPLCC includes a Tribal and First Nations committee to ensure that issues important to tribal communities continue to be addressed within the NPLCC. The NPLCC also includes a Science and TEK subcommittee to ensure that TEK is utilized in a respectful, beneficial and equitable way alongside Western science.



Northwest Climate Science Center

The Northwest Climate Science Center (NW CSC) provides objective scientific information and tools that Northwest managers of land, water, wildlife, and cultural resources use to anticipate, monitor, and adapt to climate change. The NW CSC is a federally led research collaboration hosted by three primary universities: Oregon State University, the University of Idaho, and the University of Washington. The NW CSC encompasses Washington, Oregon, Idaho, and western Montana and has overlapping boundaries with three LCCs: the North Pacific, Great Northern, and Great Basin LCC. Fifty-two federally recognized tribes have reservations or natural and cultural resources interests within the NW CSC boundaries, and three tribal organizations (Affiliated Tribes of Northwest Indians, Columbia River Inter-Tribal Fish Commission, and Northwest Indian Fisheries Commission) serve on the NW CSC Executive Stakeholder Advisory Committee, which guides the science priorities of the NW CSC.

Resources

Elk Valley Rancheria: <http://www.elk-valley.com/>
Heiltsuk Nation: <http://fnbc.info/heiltsuk-nation>
Karuk Tribe: <http://www.karuk.us/karuk2/home>
Organized Village of Kasaan: <http://www.kasaan.org/>
Smith River Rancheria: <http://www.tolowa-nsn.gov/>
Swinomish Indian Tribal Community: <http://www.swinomish-nsn.gov/>
Tulalip Tribes: <http://www.tulaliptribes-nsn.gov/>
Yurok Tribe: <http://www.yuroktribe.org/>

California State Parks: <http://www.parks.ca.gov/>
Affiliated Tribes of Northwest Indians (ATNI): <http://www.atntribes.org/>
Columbia River Inter-Tribal Fishing Commission (CRITFC): <http://www.critfc.org/>
Northwest Indian Fisheries Commission (NWIFC): <http://nwifc.org/>
North Pacific Landscape Conservation Cooperative: <http://northpacificlcc.org/>
Northwest Climate Science Center: <http://www.doi.gov/csc/northwest/index.cfm>

Tribal Climate Change Profile Project:

The University of Oregon Environmental Studies Program and the USDA Forest Service Pacific Northwest Research Station are developing tribal climate change project profiles as a pathway to increasing knowledge among tribal and non-tribal organizations interested in learning about climate change mitigation and adaptation efforts. Each profile is intended to illustrate innovative approaches to addressing climate change challenges and will describe the successes and lessons learned associated with planning and implementation. For more information about the PNW Tribal Climate Change Project, contact Kathy Lynn at kathy@uoregon.edu, or visit <http://tribalclimate.uoregon.edu/>.

Carson Viles, a University of Oregon undergraduate research assistant with the Project, is coordinating development of these profiles. Carson is an enrolled member of the Confederated Tribes of Siletz Indians. He is in the Clark Honors College and is pursuing a degree in Environmental Studies. Carson can be contacted at cviles@uoregon.edu